

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. – 29. (cancelled)

30. (new) An insulation material, wherein the insulation material comprises an inorganic, porous matrix having additional pores therein and wherein the insulation material is based on a composition which comprises a) a sol comprising at least one of nanoparticles, polycondensates and precursors thereof as a binder and b) one or more solid pore formers giving rise to the additional pores.

31. (new) The insulation material of claim 30, wherein the insulation material is obtainable by shaping the composition or applying the composition to a substrate and curing the composition.

32. (new) The insulation material of claim 30, wherein an average pore diameter of the additional pores is greater than an average diameter of pores of the porous matrix.

33. (new) The insulation material of claim 32, wherein the average pore diameter of the additional pores is at least 3 times larger than the average diameter of the pores of the porous matrix.

34. (new) The insulation material of claim 33, wherein the average pore diameter of the additional pores is at least 5 times larger than the average diameter of the pores of the porous matrix.

35. (new) The insulation material of claim 30, wherein the porous matrix comprises at least one of micropores and mesopores.

36. (new) The insulation material of claim 32, wherein the average diameter of pores of the porous matrix is below 200 nm.

37. (new) The insulation material of claim 33, wherein the average diameter of the pores of the porous matrix is below 50 nm.

38. (new) The insulation material of claim 34, wherein the average diameter of the pores of the porous matrix is below 2 nm.

39. (new) The insulation material of claim 30, wherein the additional pores comprise macropores.

40. (new) The insulation material of claim 34, wherein the average diameter of the additional pores is at least 300 nm.

41. (new) The insulation material of claim 36, wherein the average diameter of the additional pores is at least 0.5 µm.

42. (new) The insulation material of claim 30, wherein the insulation material comprises at least 10 % by volume of pores (matrix pores + additional pores), based on a total volume of the insulation material.

43. (new) The insulation material of claim 30, wherein the composition further comprises organic compounds or organic groups which can be burned out to produce the inorganic matrix.

44. (new) The insulation material of claim 30, wherein the nanoparticles comprise at least one metal oxide.

45. (new) The insulation material of claim 44, wherein the nanoparticles comprise at least one of SiO_2 , Al_2O_3 , AlOOH , Ta_2O_5 , TiO_2 and ZrO_2 .

46. (new) The insulation material of claim 30, wherein the nanoparticles comprise SiO_2 .

47. (new) The insulation material of claim 30, wherein the composition comprises a nanocomposite comprising nanoparticles which are surface-modified by at least one of an organic compound and a compound containing organic groups.

48. (new) The insulation material of claim 47, wherein organic components of the nanocomposite have been burned out to form the matrix.

49. (new) The insulation material of claim 47, wherein the nanoparticles are surface-modified by one or more compounds selected from hydrolyzable silanes having at least one non-hydrolyzable, organic group, carboxylic acids, anhydrides, amides, amine compounds, imines, β -diketones, amino acids and proteins.

50. (new) The insulation material of claim 47, wherein the nanoparticles are surface-modified by one or more silanes of formula (I)



where the groups X are identical or different and are hydrolyzable groups or hydroxyl groups, the radicals R are identical or different and represent alkyl, alkenyl, alkynyl, aryl, aralkyl or alkylaryl, and n is 0, 1, 2 or 3.

51. (new) The insulation material of claim 50, wherein n is greater than 0 for at least one of the one or more silanes of formula (I).

52. (new) The insulation material of claim 50, wherein the one or more silanes of formula (I) comprise at least one silane wherein n is 1 or 2, and at least one silane of formula (II) has additionally been employed for surface-modifying the nanoparticles:



where the groups X are identical or different and are hydrolyzable groups or hydroxyl groups.

53. (new) The insulation material of claim 30, wherein the composition further comprises at least one of a hydrolysis product and a condensation product of one or more hydrolyzable compounds of glass- or ceramic-forming metals as polycondensate or precursor thereof.

54. (new) The insulation material of claim 53, wherein at least one of the one or more hydrolyzable compounds has at least one non-hydrolyzable substituent.

55. (new) The insulation material of claim 53, wherein at least one of the one or more hydrolyzable compounds is selected from compounds of Si, Al, B, Sn, Ti, Zr, Mg, V and Zn.

56. (new) The insulation material of claim 30, wherein the sol comprises a polycondensate or a precursor thereof and surface-modified nanoparticles.

57. (new) The insulation material of claim 30, wherein the composition comprises at least one refractory component.

58. (new) The insulation material of claim 30, wherein the one or more solid pore formers comprise hollow particles.

59. (new) The insulation material of claim 30, wherein the one or more solid pore formers comprise particles which comprise at least one of a thermally decomposable and a vaporizable material.

60. (new) The insulation material of claim 30, wherein the one or more solid pore formers comprise an intumescent agent.

61. (new) The insulation material of claim 58, wherein the hollow particles comprise glass or a plastic material.

62. (new) The insulation material of claim 59, wherein the particles comprise one or more of a metal nitrate, an organic salt, NH_4Cl , carbon black, flour, wood flour, a wax, a protein, a polysaccharide, a silicone resin and a plastic material.

63. (new) The insulation material of claim 59, wherein the particles comprise hollow particles.

64. (new) The insulation material of claim 30, wherein the composition further comprises at least one of an organic monomer, oligomer or polymer as additive for controlling at least one of a viscosity and a binding strength of a molding.

65. (new) The insulation material of claim 30, wherein the material is in a form of a molded body.

66. (new) The insulation material of claim 30, wherein the material is present as a coating on a substrate.

67. (new) An insulation material, wherein the insulation material comprises an inorganic, porous matrix having additional pores therein and is based on a composition which comprises a) a sol comprising at least one of nanoparticles, polycondensates and precursors thereof as a binder and b) one or more solid pore formers giving rise to the additional pores, and wherein an average diameter of pores of the porous matrix is below 50 nm, an average diameter of the additional pores is at least 300 nm, and the insulation material comprises at least 12 % by volume of pores (matrix pores + additional pores), based on a total volume of the insulation material.

68. (new) A process for producing an insulation material comprising an inorganic, porous matrix, which process comprises shaping a composition or applying the composition to a substrate, the composition comprising a) a sol

comprising at least one of nanoparticles, polycondensates and precursors thereof as a binder and b) one or more solid pore formers and curing the composition to form a porous matrix having therein additional pores formed by the one or more solid pore formers.

69. (new) The process of claim 68, wherein the shaped or applied composition is heat-treated at a temperature of at least 40°C to cure the composition.

70. (new) The process of claim 68, wherein the shaped or applied composition is heat-treated in at least two stages having different temperatures.

71. (new) The process of claim 68, wherein the composition is heat-treated at a temperature of at least 100°C to effect intermediate curing or curing.

72. (new) The process of claim 71, wherein the composition is heat-treated at a temperature of at least 150°C.

73. (new) The process of claim 68, wherein the composition is cured at a temperature of at least 300°C.

74. (new) The process of claim 73, wherein the composition is cured at a temperature of at least 350°C.

75. (new) A method of at least one of insulating an object against heat or cold and protecting the object from fire, wherein the method comprises employing the insulating material of claim 30 to insulate or protect the object.

76. (new) A method of protecting a heat-sensitive component from heat, wherein the method comprises encapsulating the heat-sensitive component with the insulating material of claim 30.